

AMENDMENTS TO THE CLAIMS

Claims 1-11 (canceled)

Claim 12 (new) A power-delivery circuit for delivering a combined power and data signal to a network device, the power delivery circuit comprising:

a power-input port receiving a power supply signal;

a data-input port receiving a data signal;

a mixer circuit combining the power supply signal and the data signal to generate the combined power and data signal;

a data/power-output port communicating the combined power and data signal to the network device over a network data cable;

a data/power-input port receiving the combined power and data signal via the network cable; and

an isolation circuit electrically isolating the network device from the data-input, power-input and data/power-input ports in the event of a specific predefined voltage signal being applied to one of the power-input port, data-input and data/power input ports.

Claim 13 (new) The power-delivery circuit of claim 12, wherein the isolation circuit comprises an isolation transformer coupled between the data-input port and the data/power-output port.

Claim 14 (new) The power-delivery circuit of claim 12, wherein the isolation circuit comprises an isolation transformer coupled between the data/power input port and the network device.

Claim 15 (new) The power delivery circuit of claim 12, wherein the isolation circuit provides isolation of at least one thousand five hundred volts.

Claim 16 (new) A power-delivery circuit for delivering a combined power and data signal to a network device, the power delivery circuit comprising:

- a power-input port receiving a power supply signal;

- a data-input port receiving a data signal;

- a mixer circuit combining the power supply signal and the data signal to generate the combined power and data signal;

- a data/power-output port communicating the combined power and data signal to the network device over a network data cable;

- a data/power-input port receiving the combined power and data signal via the network cable;

- a filter circuit separating the power signal and the data signal from the combined power and data signal; and

- a current-control circuit controlling a rate of change of a current of the power supply signal over time.

Claim 17 (new) The power delivery circuit of claim 16, wherein the current-control circuit comprises one or more current limiting devices coupled with the power input port, the current limiting devices controlling the rate of change of the current of the power supply signal over time prior to the mixer circuit combining the power supply signal with the data signal.

Claim 18 (new) The power delivery circuit of claim 17, wherein the one or more current limiting devices each comprises a series inductor.

Claim 19 (new) The power delivery circuit of claim 16, wherein the current-control circuit comprises one or more current limiting devices coupled with the network device, the current limiting devices controlling the rate of change of the current of the power supply signal over time after the filter circuit separates the power supply signal and the data signal from the combined power and data signal.

Claim 20 (new) The power delivery circuit of claim 19, wherein the one or more current limiting devices each comprises a series inductor.

Claim 21 (new) The power delivery circuit of claim 19, wherein the one or more current limiting devices are coupled with a power converter circuit included in the network device.

Claim 22 (new) A power-delivery circuit for delivering a combined power and data signal to a network device, the power delivery circuit comprising:

a power-input port receiving a power supply signal;

a data-input port receiving a data signal;

a mixer circuit combining the power supply signal and the data signal to generate the combined power and data signal;

a data/power-output port communicating the combined power and data signal to the network device over a network data cable;

a data/power-input port receiving the combined power and data signal via the network cable; and

a current-balancing circuit equalizing current flow on at least one wire pair of the network cable.

Claim 23 (new) The power-delivery circuit of claim 22, wherein the current balancing circuit includes at least one center tapped inductor coupled with the power-input port.

Claim 24 (new) The power-delivery circuit of claim 23, wherein the at least one center-tapped inductor is coupled with the power-input port via a series inductor.

Claim 25 (new) The power-delivery circuit of claim 22, wherein the current balancing circuit comprises at least one center-tapped inductor coupled with the data/power-input port.

Claim 26 (new) A method of delivering power to a network device over a network cable, the method comprising:

providing a power supply signal;

providing a data signal;

combining the power supply signal and the data signal into a combined power and data signal;

delivering the combined power and data signal to the network device over one or more pairs of wires in the network cable;

reducing electromagnetic interference with the network device from the combined power and data signal; and

equalizing current flow on at least one wire pair of the network cable.

Claim 27 (new) The method of claim 26, wherein the power supply signal has a first frequency and the data signal has a second frequency, the first frequency being lower than the second frequency.

Claim 28 (new) The method of claim 27 wherein the first frequency is between 0 Hz and approximately 440 Hz, and the second frequency is greater than or equal to 1 MHz.

Claim 29 (new) A power-delivery circuit for delivering a combined power and data signal to a network device, the power delivery circuit comprising:

a power-input port receiving a power supply signal;

a data-input port receiving a data signal;

a mixer circuit combining the power supply signal and the data signal to generate the combined power and data signal;

a data/power-output port communicating the combined power and data signal to the network device over a network data cable;

a data/power-input port receiving the combined power and data signal via the network cable;

an isolation circuit electrically isolating the network device from the data-input, power-input and data/power-input ports in the event of a specific predefined voltage signal being applied to one of the power-input port, data-input and data/power input ports;

a high-frequency suppression circuit reducing electromagnetic interference from the combined power and data signal with the network device; and

a current-balancing circuit equalizing current flow on at least one wire pair of the network cable.